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EXAMINER

PATEL, DEVANG R

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/790,023	<b>Applicant(s)</b> STREBELLE ET AL.	
	<b>Examiner</b> DEVANG PATEL	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1-3, 5-7 and 9-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grosch et al. (DE 19623611, machine translation) and in view of Sepulveda et al. (US 4613427).

a. **Regarding claim 1**, Grosch et al. (hereafter **Grosch**) discloses a process for preparation of epoxides comprising reacting an olefinic with a peroxide in the presence of an epoxidation catalyst [abstract, page 1] obtained by the steps of:

i. blending a mixture including a titanium zeolite powder, water, binder, molding assistant such as methyl cellulose acts as a plasticizer and as a pore-forming substance [examples]. Methyl cellulose is a pore-forming substance as explicitly taught by Sepulveda et al. (hereafter Sepulveda). **Sepulveda** further discloses exemplary pore-forming substances such as carbon, wood powder, polyethylene glycol, cellulose, methylcellulose, or melamine, in order to produce the optimum pore volume [col. 4, lines 15-25]. The claim would have been obvious because the substitution of one known pore-forming substance for another (i.e. melamine of Sepulveda for methyl cellulose of Grosch) would have

yielded the predictable results of obtaining an optimum pore volume to a person of ordinary skill in the art at the time of the invention. It is also noted that similar to Grosch, Sepulvada further discloses the steps of extrusion and calcination to obtain final catalyst in the form of extrudates [col. 4, lines 25-45].

- ii. shaping the paste obtained in step i by extrusion [ Grosch- page 1];
  - iii. drying in order to remove at least some of water and calcining to remove at least some of the organic residues, and obtaining extruded granules [page 1].
- b. **As to claim 2**, Grosch discloses the titanium zeolite having a crystalline structure of the ZSM-5, 11 type, wherein there is 10 wt% binder chosen from silicon derivative and converted into catalyst matrix [page 2].
- c. **As to claim 3**, Grosch discloses the titanium zeolite having an IR absorption at about  $960\text{ cm}^{-1}$  [example 1].
- d. **As to claim 5**, Grosch discloses cylindrical extruded granules with 2 mm diameter and length of 1-8 mm [examples].
- e. **As to claim 6**, the catalyst of Grosch contains from 1-99 wt% titanium zeolite, the remainder being matrix.
- f. **As to claims 7 and 11**, Grosch discloses methyl cellulose (plasticizer) is a polysaccharide and binder includes siloxane derivative.
- g. **As to claim 9**, the amount of methyl cellulose is between 1-10 wt% [examples].

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h. **As to claims 10 and 12-13**, Sepulveda discloses a pore-forming substance (methyl cellulose or melamine) in an amount from 5-40 wt% to obtain an optimum pore volume in the final catalyst, preferably between 8-30 wt% with respect to dry clay (catalyst base material) [col. 4, lines 20-25]. The base material with respect to catalyst of Grosch is titanium zeolite. Grosch in view of Sepulveda meets the claimed amount of 6-14 wt% relative to the weight of titanium zeolite. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed weight ranges through process optimization, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

i. **Regarding claim 14**, Grosch discloses a process for preparation of propylene oxide (i.e. 1,2 epoxypropane) comprising reacting propen (i.e. propylene) with hydrogen peroxide in the presence of an epoxidation catalyst [page 2] obtained by the steps of:

iv. blending a mixture including a titanium zeolite powder, water, binder, molding assistant such as methyl cellulose acts as a plasticizer and as a pore-forming substance [examples]. Methyl cellulose is in fact a pore-forming substance as taught by Sepulveda et al. (hereafter Sepulveda). Sepulveda further discloses exemplary pore-forming substances such as carbon, wood powder, polyethylene glycol, cellulose, methylcellulose, or melamine, in order to produce the optimum pore

volume [col. 4, lines 15-25]. The claim would have been obvious because the substitution of one known pore-forming substance for another (i.e. melamine of Sepulvada for methyl cellulose of Grosch) would have yielded the predictable results of obtaining an optimum pore volume to a person of ordinary skill in the art at the time of the invention. It is also noted that similar to Grosch, Sepulvada further discloses the steps of extrusion and calcination to obtain final catalyst in the form of extrudates [col. 4, lines 25-45].

- v. shaping the paste obtained in step i by extrusion [page 1];
- vi. drying in order to remove at least some of water and calcining to remove at least some of the organic residues, and obtaining extruded granules [page 1].

2. **Claims 4 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grosch et al. (DE 19623611) in view of Sepulvada et al. (US 4613427) as applied to claim 1 above, and further in view of Balducci et al. (US 5965476).

- j. **As to claim 4**, Grosch does not explicitly disclose the claimed formula. However, Balducci et al. (drawn to silica/zeolite composite preparation process) discloses titanium-silicalites catalysts satisfying the general formula  $x\text{TiO}_2(1-x)\text{SiO}_2$ , with x varying from 0.0005-0.04. It would have been obvious to a person of ordinary skill in the art to use titanium silicalites having the claimed formula because they provide a particular selectivity in epoxidation reactions of olefins [col. 1, lines 13-18].

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k. **As to claim 8**, Grosch discloses the powder having 60 mesh particle size distribution, but this is much larger than 10 micron. Balducci et al. is drawn to silica/zeolite composite preparation process and discloses that such materials have particular selectivity in epoxidation reactions of olefins as stated above in claim 4. Balducci discloses both titanium-silicalites and beta zeolites, in powder form, have submicronic particles of <1 micron. Thus, it meets the limitation of powder having a mean diameter of less than 10 micron. Balducci further discloses that these materials are typically subjected to granulation processes, wherein the form and dimensions of the granules are dependent on various factors such as type of reactor, mass transport or heat phenomena limitations, or to control load losses of the catalytic bed [col. 1, lines 31-40]. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed mean diameter of <10 micron through process optimization, since the dimensions are made suitable according to reactor type, mass transport or heat phenomena limitations, or to control load losses of the catalytic bed.

### ***Double Patenting***

Claims 1-14 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,699,812 in view of Grosch et al. (DE 19623611), as explained in the previous office action.

Applicant states that a terminal disclaimer is submitted with the amendment, however, such does not appear on record.

### ***Response to Declaration***

The Declaration under 37 CFR 1.132 filed 8/29/08 is insufficient to overcome the rejection of claims 1-14 based upon Grosch et al. because:

- a. The evidence set forth in the Declaration is not commensurate in scope with the claims. The declaration exemplifies a specific zeolite, a specific binder, a specific pore forming agent, and a specific plasticizer in specific amounts, none of which are recited in combination in the claims. It is also noted that while the "Conclusion" of declaration states that: "*catalyst with an unexpectedly higher activity is obtained while the catalyst still has a good resistance to attrition*", such features are not recited in any claims.
- b. Moreover, it is not clear that the pore forming agent produces an unexpected result. For example, the results in the Table suggest that no melamine and 6g of binder results in the same rate constant (k) as 10 g melamine and 20 g binder.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.



### ***Response to Arguments***

Applicant's arguments filed 8/29/08 have been fully considered but they are not persuasive.

Applicant argues that Grosch reference does not teach or suggest a pore forming substance and the Examiner has thus relied on the Sepulvada reference to supply the pore forming substance. Examiner respectfully disagrees. Grosch implicitly discloses a pore-forming substance (i.e. methyl cellulose), as supported by the evidence of Sepulvada [col. 4, lines 17-22]. Sepulvada was used to corroborate the limitation of a pore forming substance, not explicitly to "supply" a pore forming substance as asserted by the Applicant.

Applicant argues that one of ordinary skill in the art would not have combined Grosch with Sepulvada reference because the introduction of a pore-forming material into the catalyst would be expected to have a significant affect on the attrition rate. In response, Examiner contends that the catalyst of Grosch already includes a pore-forming material (i.e. methyl cellulose) and so the introduction of a pore-forming substance into the catalyst is immaterial. Sepulvada discloses exemplary pore-forming substances for a catalyst including methylcellulose (just like Grosch) and melamine (just like present invention- claim 13). The claim would have been obvious because the substitution of one known pore-forming substance for another (i.e. melamine of Sepulvada for methyl cellulose of Grosch) would have yielded the predictable results of obtaining an optimum pore volume to a person of ordinary skill in the art at the time of the invention.

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Applicant further argues that Sepulvada fails to specify what would be considered an optimum pore volume. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. optimal pore volume) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

Applicant argues that Sepulvada does not teach or suggest producing a catalyst which can resist attrition. In response, Examiner notes that the features upon which applicant relies (i.e. resisting attrition) are not recited in any rejected claim(s). In any event, the melamine of Sepulvada substituted for methyl cellulose of Grosch would inherently provide resistance to attrition.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

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the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Claims 1-14 are rejected.**

The rejections above rely on the references for all the teachings expressed in the text of the references and/or one of ordinary skill in the art would have reasonably understood from the texts. Only specific portions of the texts have been pointed out to emphasize certain aspects of the prior art, however, each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

Applicant is reminded to specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. 1.121; 37 C.F.R. Part 41.37; and MPEP 714.02.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVANG PATEL whose telephone number is (571)270-3636. The examiner can normally be reached on Monday thru Thursday, 8:00 am to 5:30 pm, EST..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./

Examiner, Art Unit 1793

/Kiley Stoner/

Primary Examiner, Art Unit 1793